

### **REMARKS**

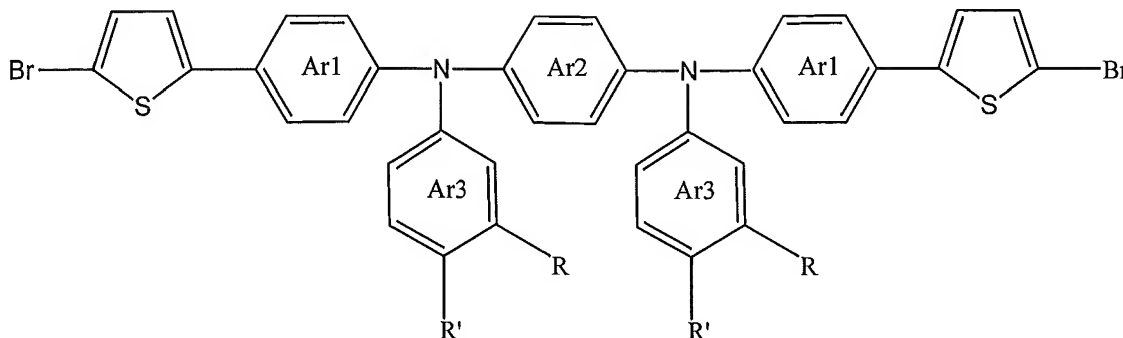
The applicant respectfully request reconsideration in view of the following remarks.

Claims 1, 4-5, 7, 9-10, 13-18, 20, 24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 03/035714 (Towns). Claims 2-3 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towns. Claim 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towns in view of (Allen) US 6,858,703. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towns in view of Allen and further in view of US 6,740,900 (Hirai). Claims 1-5, 7, 9-10, 13-20 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,948,552 (Antoniadis) in view of *Advanced Materials*, 1999, Vol. 11, No. 3, pages 241-246 (Bradley). Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoniadis in view of Allen. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Antoniadis in view of Allen and further in view of Hirai.

### **Rejections Over Towns**

Claims 1, 4-5, 7, 9-10, 13-18, 20, 24, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Towns. Claims 2-3 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towns. Claim 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Towns in view of (Allen). Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towns in view of Allen and further in view of Hirai.

As the Examiner stated at page 3 of the Office Action, Towns discloses the following formula



With respect to this formula, the following must be stated:

There are two significant differences between this formula and formula (I) of pending claim 1 of the present application. First of all, the formula of Towns et al. contains two thiophene rings (containing S) which are not part of the repeating unit (1) of claim 1 of the present application. Furthermore, as can be seen from the above- depicted formula, only the phenyl rings which are not part of the polymer main chain (i.e. Ar<sup>3</sup>) are substituted whereas the phenyl rings of the polymer main chain (i.e. Ar<sup>1</sup> and Ar<sup>2</sup>) are unsubstituted, This is recognized by the Examiner in item 11 of the Office Action ("Towns fails to mention substitution at Ar<sup>1</sup> and Ar<sup>2</sup>").

In contrast to the disclosure of Towns, formula (I) of claim 1 of the present application is characterized in that **“at least one of Ar<sup>2</sup>, and/or either or both of Ar<sup>1</sup> is substituted with at least one substituent” (see the bottom of claim 1).** Consequently, the repeating unit of formula (I) of claim 1 of the present application differs substantially from the disclosure of the prior art in that at least one of the phenyl rings of the polymer main chain is substituted. Such a disclosure cannot be found in Towns. Therefore, pending claim 1 is not anticipated by Towns.

Furthermore, the applicant disagree with the Examiner in item no. 11 of the Office Action, that the repeating unit of formula (I) of the present application is an isomer of the unit of formula of Towns. For the reasons stated above especially since Towns does not disclose that at least one of Ar<sup>2</sup>, and/or either or both of Ar<sup>1</sup> is substituted with at least one substituent. Therefore, Towns teaches away from the applicant's claimed invention and would not rendered the applicant's claimed invention obvious.

The applicant believes that the secondary references would not render the applicant's claimed invention obvious.

A statement that modifications of the prior art to meet the claimed invention would have been "obvious to one of ordinary skill in the art at the time the invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See MPEP § 2143.01 IV. "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Furthermore, the Examiner cannot selectively pick and choose from the disclosed parameters without proper motivation as to a particular selection. The mere fact that a reference may be modified to reflect features of the claimed invention does not make the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430 (Fed. Cir. 1990); *In re Fritch*, 23 USPQ2d 1780 (Fed. Cir. 1992). Thus, it is impermissible to simply engage in a hindsight reconstruction of the claimed invention where the reference itself provides no teaching as to why

the applicant's combination would have been obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991).

In addition in item 11 of the Office Action, it is also stated that "**in the absence of unexpected results**, at the time of invention, it would have been obvious for a person skilled in the art to have made a series of monomers with varying levels of substitution .... with a reasonable expectation of success".

With respect to this statement, the applicant believes that the examples provide this evidence.

According to the device examples of the present application two inventive copolymers and two comparative polymers have been tested in electroluminescent devices. The inventive copolymers differ from the copolymers of the prior art only in that the triarylamine unit of formula (I) (i.e. monomer 2) is substituted not only at "Ar<sup>3</sup>" but also at "Ar<sup>2</sup>" whereas the corresponding comparative unit is only substituted at "Ar<sup>3</sup>".

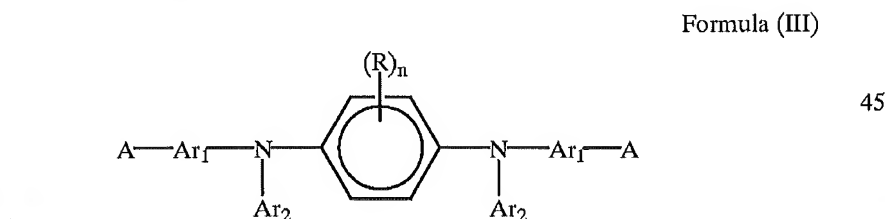
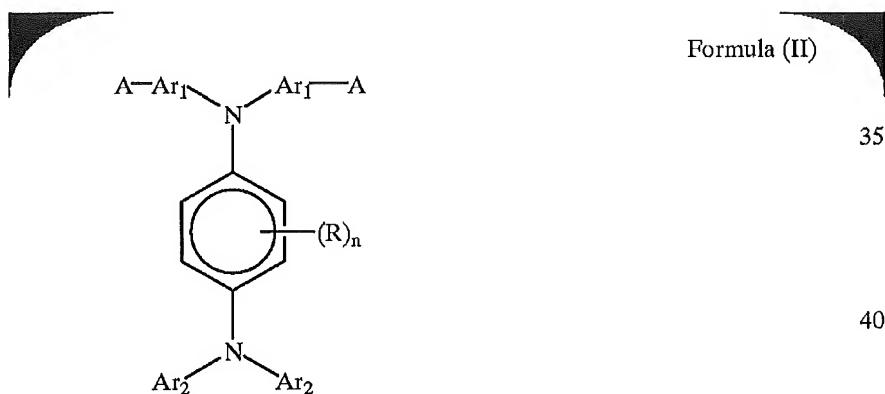
As is shown in the data of the working examples and already stated in the specification of the present application, polymers containing substituted repeating units according to the present invention are blue-shifted relative to polymers containing the unsubstituted prior art repeating unit. The respective CIE y-coordinate serves as a particularly useful guide to the depth of color of a polymer. Alkyl substituted polymers are blue-shifted relative to corresponding comparative polymers. A very marked blue shift is observed in fluorine substituted polymers (see page 25 of the applicant's specification).

### **Rejections Over Antoniadis**

Claims 1-5, 7, 9-10, 13-20 and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoniadis in view of Bradley. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antoniadis in view of Allen. Claim 22 is rejected under 35

U.S.C. 103(a) as being unpatentable over Antoniadis in view of Allen and further in view of Hirai.

Antoniadis discloses polymers containing units of formulae (II) and (III), but do not disclose other copolymers.



(see col. 9, lines 28-

50).

The applicant has three independent claims (claims 1, 13 and 24).

### **Independent Claims 1 and 13**

The applicant's pending claims 1 and 13 require that the second repeat unit is selected from optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene, heteroaryl or dihydrophenanthrene. As the Examiner has correctly stated in item no. 17 at page 9 of the Office Action, Antoniadis discloses a triarylamine but does not disclose nor teach the applicant's claimed second repeat unit being selected from optionally substituted phenyl, fluorene,

spirobifluorene, indenofluorene, heteroaryl or dihydrophenanthrene. Antoniadis teaches away from the applicant's claimed invention.

The polymers of the present application which contain repeat units of formula (I) with at least one substituent as well as the claimed co-units, are significant bluer than the unsubstituted units as disclosed in the prior art (specification, page 3, paragraph below the summary of the invention). The blue emission of the copolymers, described by the CIE-color coordinates, is also clearly described in the working examples of the present application (see especially page 25 of the specification). These results are unexpected!

**Claim 24**

It is noted that Antoniadis does not disclose that the substituent on Ar<sup>1</sup> or Ar<sup>2</sup> is selected from the group consisting of optionally substituted, aliphatic or alicyclic C<sub>1-20</sub> fluoroalkyl; halogen; nitro; cyano; sulfone and sulfoxide as is required by the applicant's newly added claim 24. Therefore, Antoniadis teaches away from the applicant's claimed invention.

The secondary references do not cure the deficiency of the Antoniadis. For the above reasons, these rejections should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00040-US from which the undersigned is authorized to draw.

Date: August 20, 2010

Respectfully submitted,

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